New England Common Assessment Program

Released Items 2005

Grade 7 Mathematics

Mathematics

1 In an election, for every 4 people who voted for Mr. Smith, 1 person voted for Mr. Jones. Which fraction of the votes did **Mr. Smith** receive?

A. $\frac{1}{4}$

B. $\frac{1}{5}$

C. $\frac{3}{4}$

D. $\frac{4}{5}$

2 Angie has $5.00 to buy as many peaches as possible. She knows that the price of peaches is $0.89 or $0.99 per pound. What is the best estimate of the number of pounds of peaches Angie can buy?

A. less than 1 pound

B. between 4 and 5 pounds

C. between 5 and 6 pounds

D. between 8 and 9 pounds

3 Mr. Taylor is buying one granola bar for each of his students.

- There are 30 students.
- There are 6 granola bars in each box.
- The price of a box of granola bars is $2.16.

What is the total cost of the granola bars?

A. $ 6.48

B. $10.80

C. $12.96

D. $64.80

4 A polygon has **no** congruent sides. Which kind of polygon **could** it be?

A. rectangle

B. rhombus

C. square

D. trapezoid

5 A tire on a car measures 16 inches from where it touches the ground to the highest point on top of the tire. What is the radius of the tire?

A. 8 inches

B. 16 inches

C. 32 inches

D. 48 inches

6 Students are using string to make projects in art class.

- There are 200 students.
- Each student needs 75 centimeters of string.

How many **meters** of string are needed in all?

A. 1.5 meters

B. 15 meters

C. 150 meters

D. 1500 meters

7 Jesse keeps a chart of how many miles she runs each day.

Running Chart

Day	1	2	3	4
Distance (in miles)	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$

If the pattern continues, how many miles will Jesse run on Day 6?

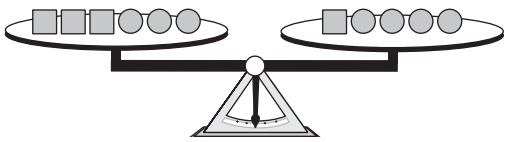
A. $2\frac{1}{2}$

B. $2\frac{3}{4}$

C. 4

D. 9

8 Look at this scale.



The scale is balanced.

Which does ○ equal?

A. □

B. □ ○

C. ○ □

D. □ □

9 For the Book Club, Serena made a stem-and-leaf plot showing the number of pages each person read yesterday.

Number of Pages Read Yesterday

0	5
1	0 2 2 2
2	6 7
3	
4	7 8
5	0 2 3

Key
2 | 7 represents 27 pages read

What is the median number of pages read?

A. 12

B. 26.5

C. 29.5

D. 48

10 At a restaurant there are 5 kinds of pasta and 2 types of sauce. How many different ways can a customer order one kind of pasta and one type of sauce?

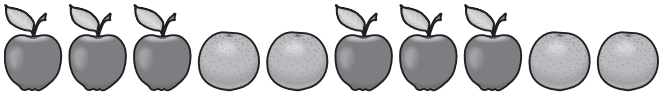
A. 5

B. 7

C. 10

D. 20

11 Look at these oranges and apples.



What is the ratio of oranges to apples?

12 The manager of a restaurant uses the formula below to decide what to charge for a meal.

$$p = (f \div 3) \times 10$$

In the formula, p is the price, in dollars, that customers pay for a meal and f is the food cost to make the meal.

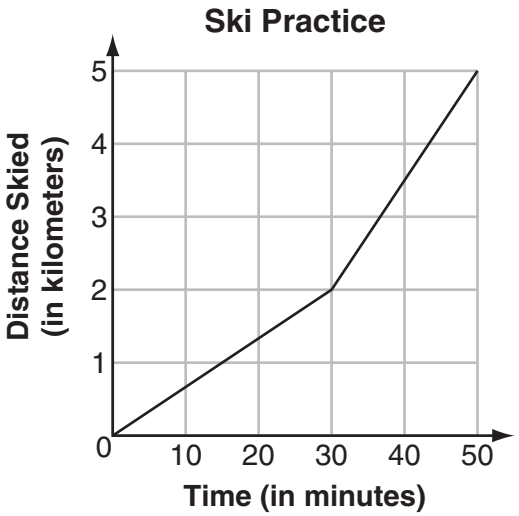
What is the price of a meal if the food cost is $4.50?

13 What is the greatest whole number value of n that makes this sentence true?

$$3^n < 100$$

Show your work or explain how you know.

14 The graph below shows the distance Ben skied during a 50-minute practice.



How does Ben's speed during the last 20 minutes of the practice compare with his speed during the first 30 minutes? Explain your answer.

15 Cal said, "All squares are similar to each other."

a. Explain how you know whether Cal is or is not correct.

Stu said, "All rectangles are similar to each other."

b. Draw two rectangles that prove that Stu's statement is **false**. Explain your answer.

Grade 7 Mathematics Released Item Information

Released Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Calculator Allowed	✓			✓		✓	✓		✓	✓		✓		✓	
Content Strand[1]	NO	NO	NO	GM	GM	GM	FA	FA	DP	DP	NO	FA	NO	FA	GM
GLE Code	6-1	6-3	6-4	6-1	6-6	6-7	6-1	6-4	6-1	6-4	6-1	6-3	6-2	6-2	6-5
Depth of Knowledge Code	1	2	2	2	1	2	2	2	2	1	1	1	2	3	3
Item Type[2]	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	SA	SA	SA	SA	CR
Answer Key	D	C	B	D	A	C	B	D	B	C					
Total Possible Points	1	1	1	1	1	1	1	1	1	1	1	1	2	2	4

[1]Content Strand: NO = Numbers & Operations, GM = Geometry & Measurement, FA = Functions & Algebra, DP = Data, Statistics, & Probability

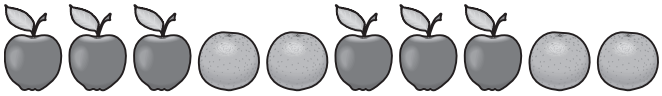
[2]Item Type: MC = Multiple-Choice, SA = Short Answer, CR = Constructed Response

New England Common Assessment Program

Released Items
Support Materials
2005

Grade 7
Mathematics

11 Look at these oranges and apples.

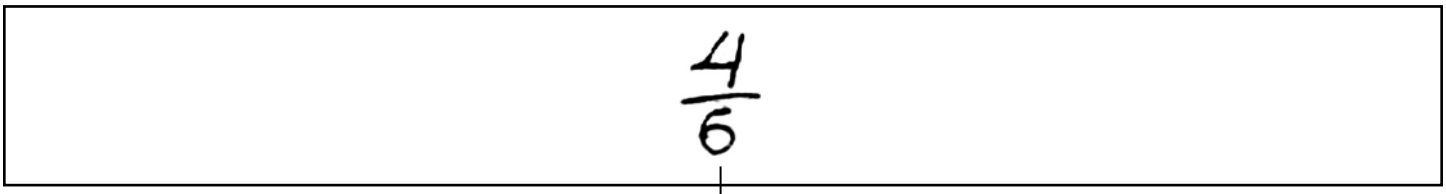


What is the ratio of oranges to apples?

Scoring Guide:

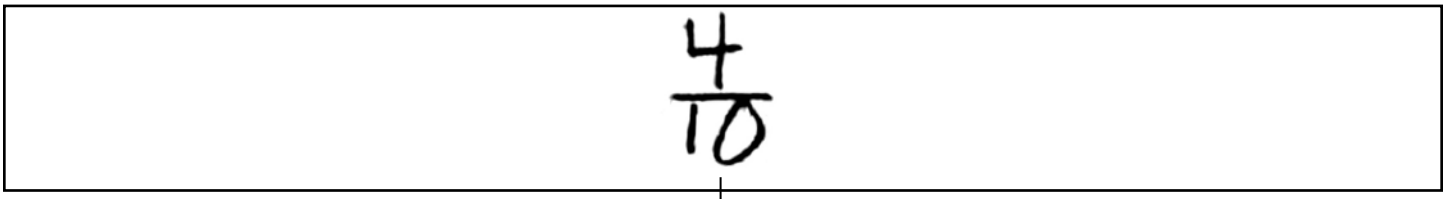
Score	Description
1	correct answer, **2 to 3,** $\frac{2}{3}$**,** or equivalent
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	no response

Score Point 1 (Example A)



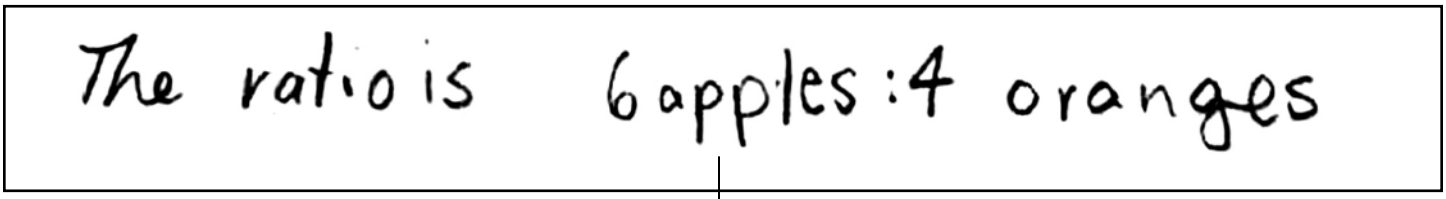
Student gives answer equivalent to $\frac{2}{3}$.

Score Point 0 (Example A)



Student's answer is incorrect.

Score Point 0 (Example B)



Student's answer is incorrect. (Student reverses ratio.)

12 The manager of a restaurant uses the formula below to decide what to charge for a meal.

$$p = (f \div 3) \times 10$$

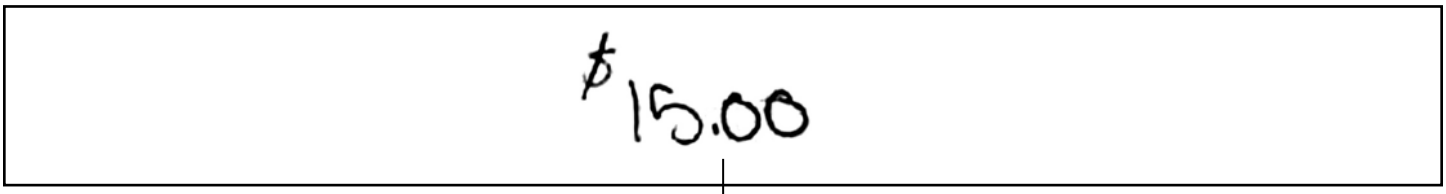
In the formula, p is the price, in dollars, that customers pay for a meal and f is the food cost to make the meal.

What is the price of a meal if the food cost is $4.50?

Scoring Guide:

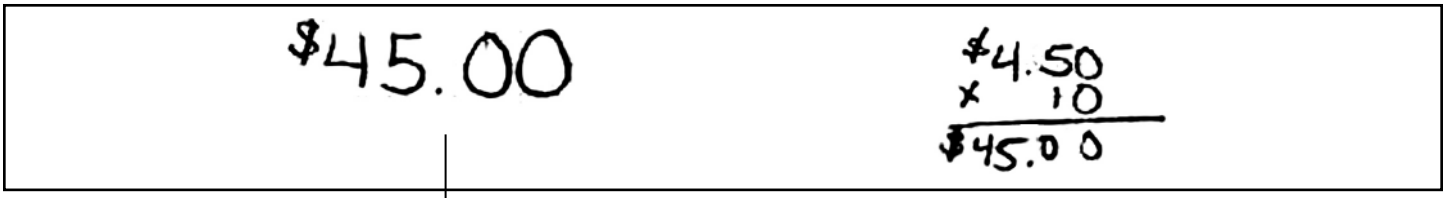
Score	Description
1	correctly finds the price, **$15.00 or 15.00 or 15**
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	no response

Score Point 1 (Example A)



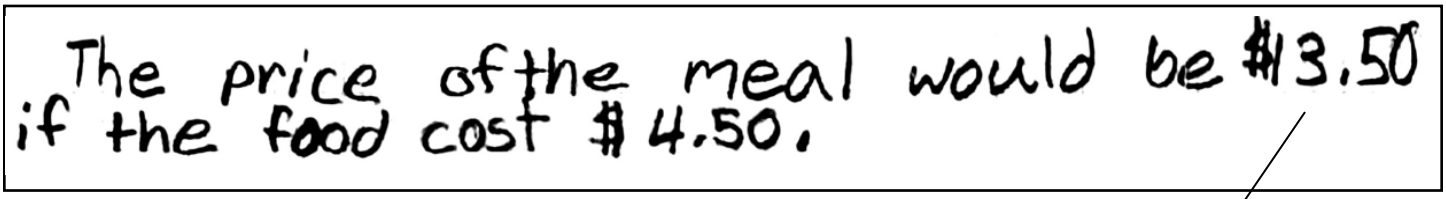
Student's answer is correct.

Score Point 0 (Example A)



Student's answer is incorrect.

Score Point 0 (Example B)



Student's answer is incorrect.

13 What is the greatest whole number value of n that makes this sentence true?

$$3^n < 100$$

Show your work or explain how you know.

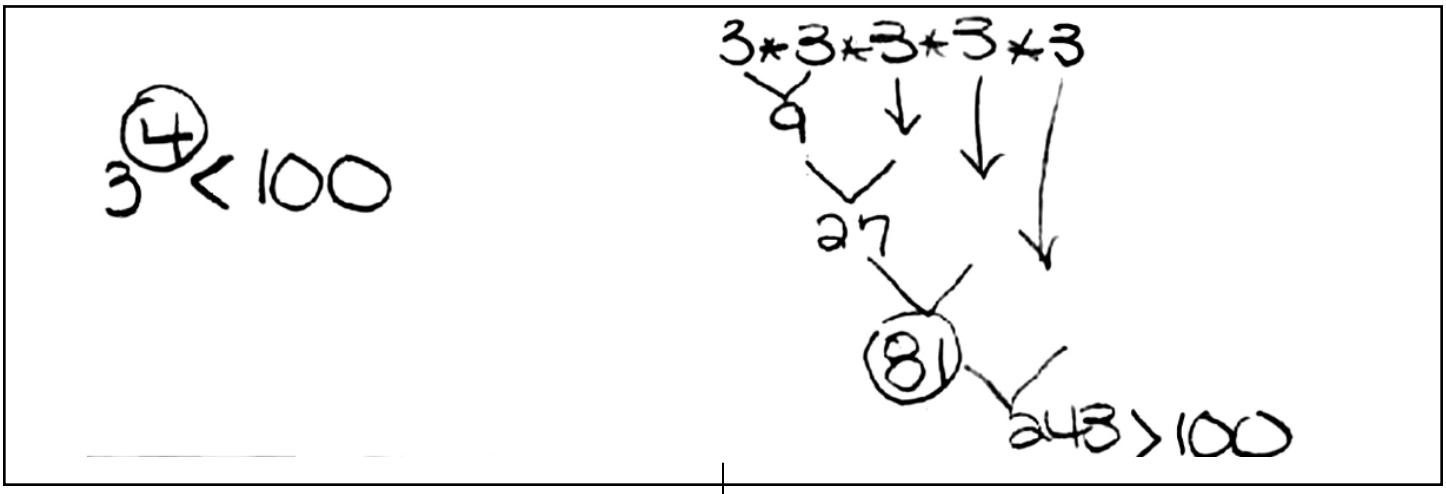
Scoring Guide:

Score	Description
2	correct answer, **4**, and indication of correct work or explanation
1	correct answer without acceptable explanation, or response shows some understanding of exponents and bases
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	no response

Sample Response:

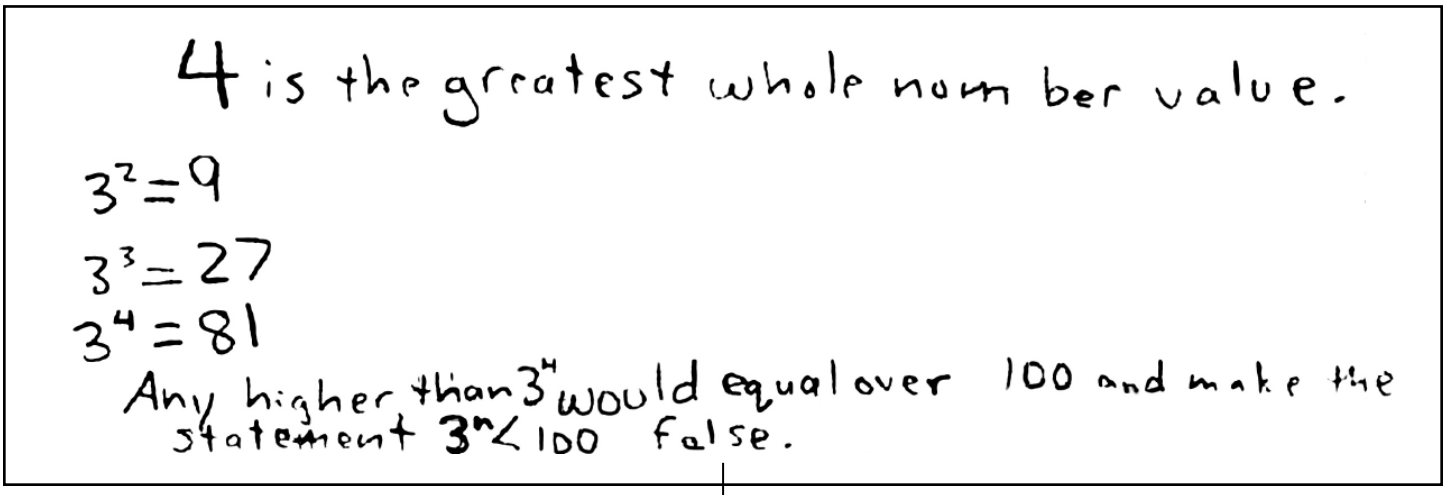
4; $3^4 = 81$, $3^5 = 245$ (higher exponents give results more than 243)

Score Point 2 (Example A)



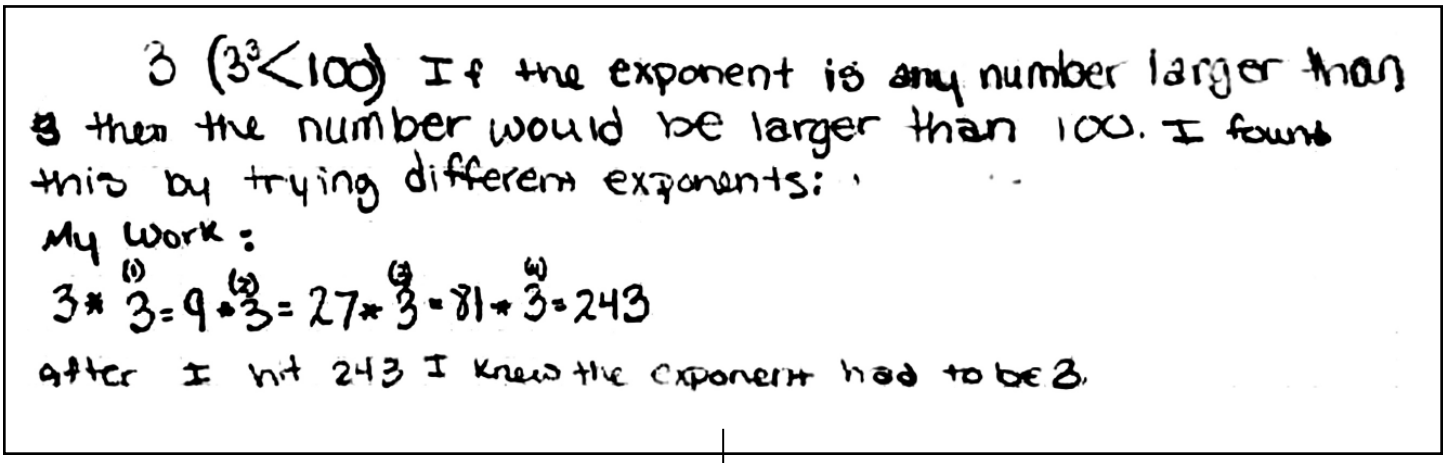
Student's answer is correct with work shown. (2 points)

Score Point 2 (Example B)



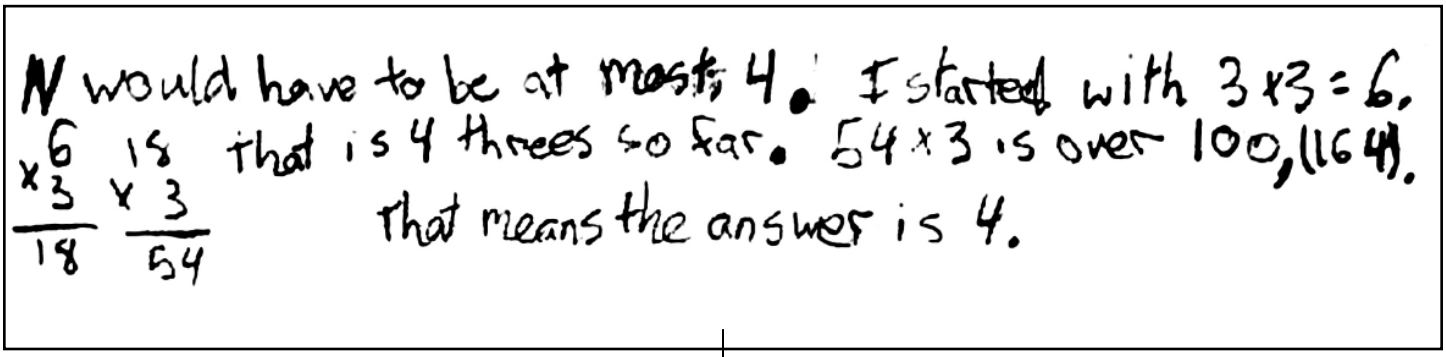
Student's answer is correct with an appropriate explanation. (2 points)

SCORE POINT 1 (EXAMPLE A)



Student's response shows some understanding of exponents and bases (1 point) but answer is incorrect because exponents are one less than they should be (0 points).

SCORE POINT 1 (EXAMPLE B)



Student's answer is correct (1 point) but explanation contains computational errors (0 points).

SCORE POINT 0 (EXAMPLE A)

The greatest that n can be is 1, because 3^1 is equal to 30 and 30 is less than 100. If you did 3^2, it equals 300 and 300 is not less than 100.

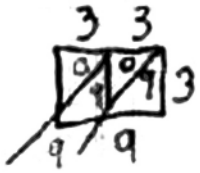
right:
$3^1 < 100$
or
$30 < 100$

wrong:
$3^2 < 100$
or
$300 < 100$

Student's answer is incorrect and explanation does not demonstrate understanding of exponents and bases. (0 points)

SCORE POINT 0 (EXAMPLE B)

$n = 33$



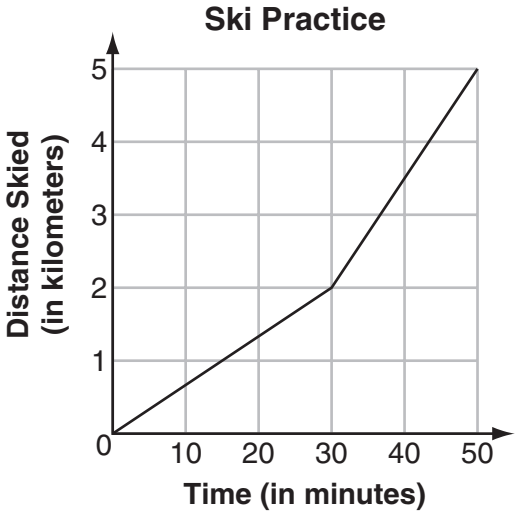
Seeing the number has to be whole you can't use decimals.

99 is the closest I could get to with a multiple of 3

$3^{33} = 99 < 100$

Student's answer is incorrect and explanation does not demonstrate understanding of exponents and bases. (0 points)

14 The graph below shows the distance Ben skied during a 50-minute practice.



How does Ben's speed during the last 20 minutes of the practice compare with his speed during the first 30 minutes? Explain your answer.

Scoring Guide:

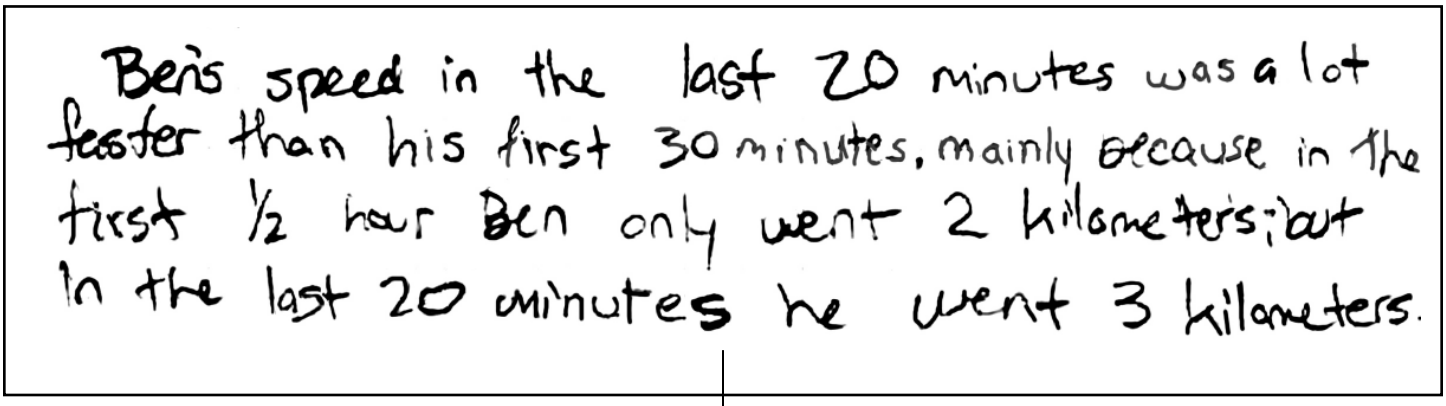
Score	Description
2	correct answer and explanation
1	correct answer OR incorrect or missing answer with explanation indicating understanding of relation of slope and speed
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	no response

Sample Responses:
During the last 20 minutes Ben skied faster than during the first 30 minutes.
This can be seen by the graph segment for the last part being steeper, meaning he covered more distance in a given amount of time.

OR

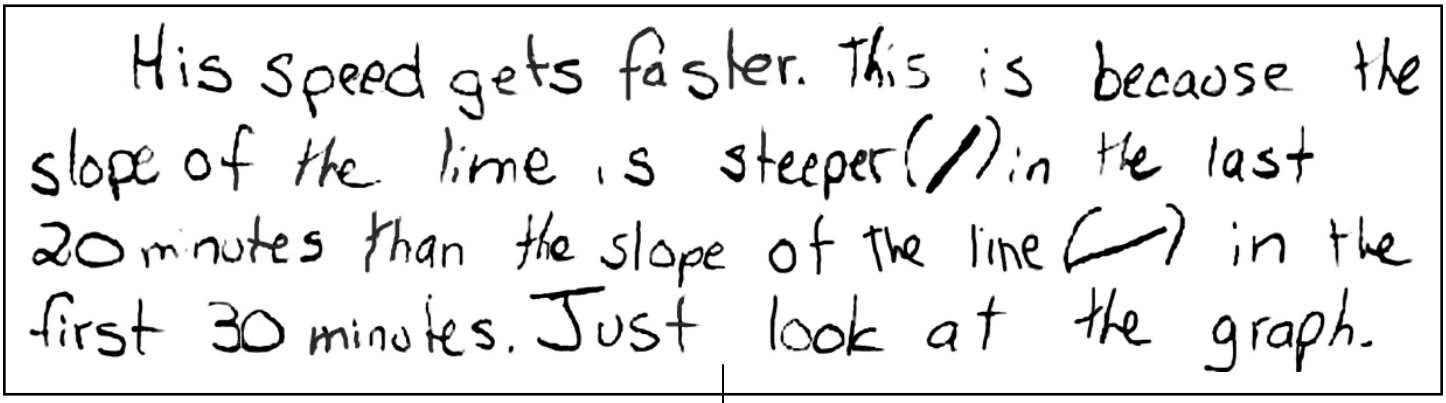
During the last 20 minutes Ben skied faster than during the first 30 minutes since Ben skied 2 kilometers in 30 minutes but 3 kilometers in only 20 minutes.

Score Point 2 (Example A)



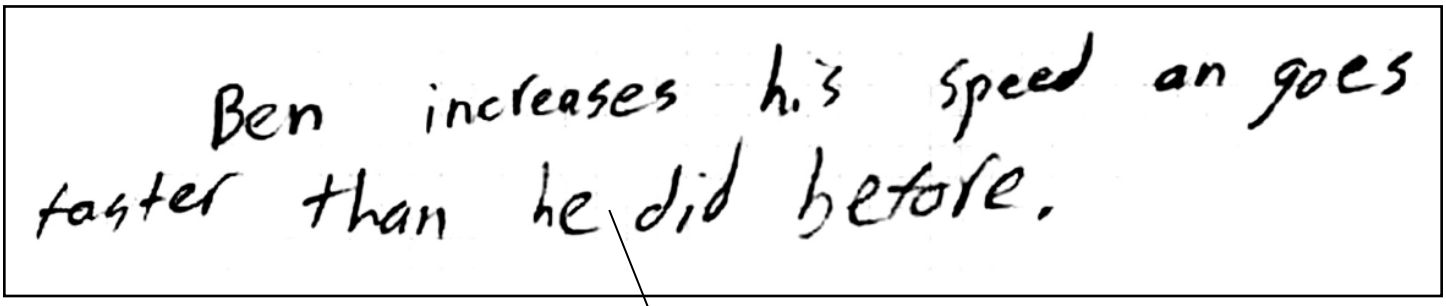
Student's answer is correct with appropriate explanation. (2 points)

Score Point 2 (Example B)



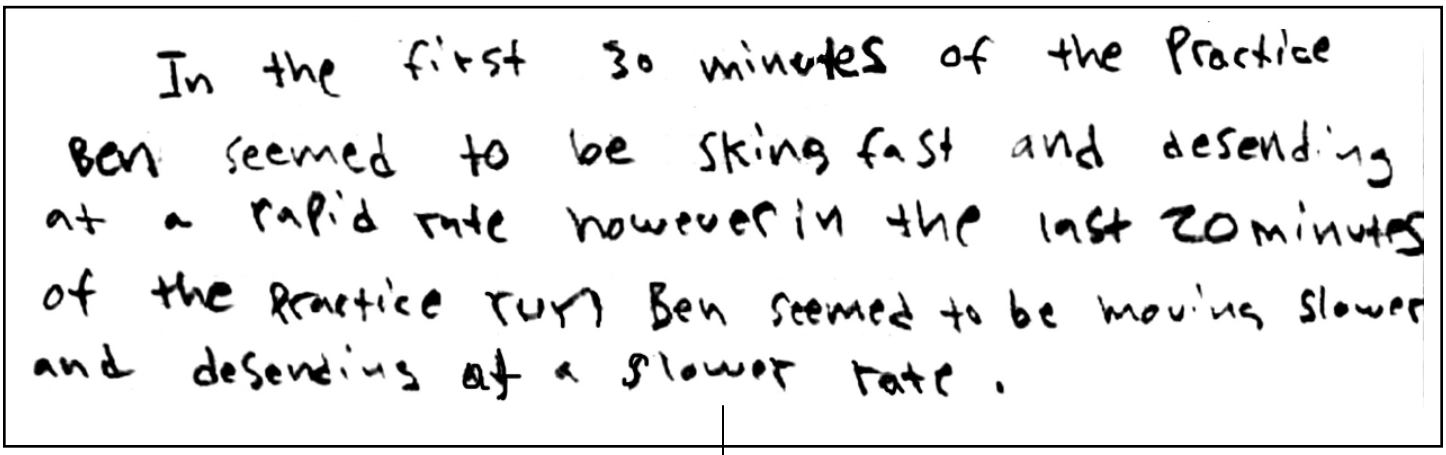
Student's answer is correct with appropriate explanation. (2 points)

Score Point 1 (Example A)



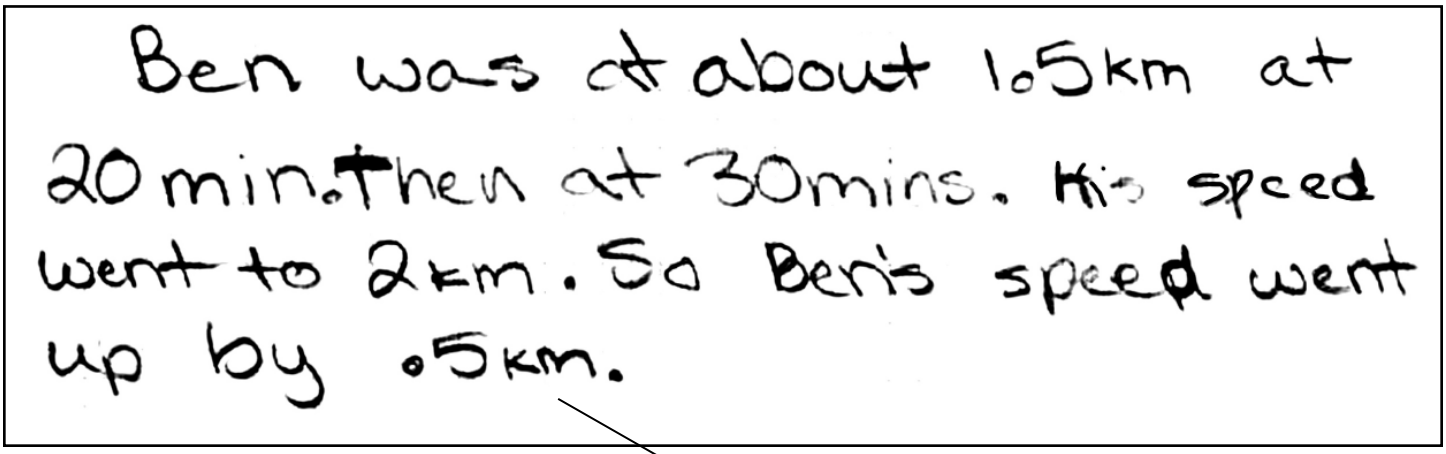
Student's answer is correct (1 point) with no explanation (0 points).

Score Point 0 (Example A)



Student's answer and explanation are incorrect. (0 points)

SCORE POINT 0 (EXAMPLE B)



Student's answer and explanation are incorrect. (0 points)

15 Cal said, "All squares are similar to each other."

a. Explain how you know whether Cal is or is not correct.

Stu said, "All rectangles are similar to each other."

b. Draw two rectangles that prove that Stu's statement is **false**. Explain your answer.

Scoring Guide:

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point OR Student shows minimal understanding of similar figures.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	no response

Training Notes:

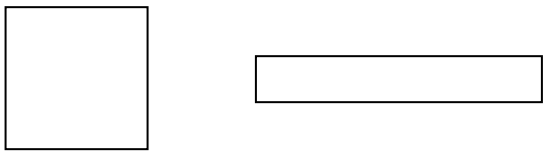
Part a: 2 points for correct answer and full explanation
OR
1 point for correct answer and partial explanation

Part b: 2 points for correct drawings and explanation
OR
1 point for correct drawings without acceptable explanation

Sample Response:

Part a: Cal is correct. All squares have 4 right angles and 4 sides of equal length, so corresponding sides are proportional.

Part b:



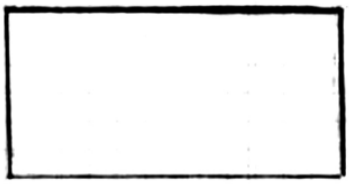
The sides of these rectangles are not proportional

Note: In part b, accept any two rectangles that have ratios of sides that are not equal.

SCORE POINT 4 (EXAMPLE A)

a. Cal is correct because all squares have to have 4 equal length sides and all four corners must be 90° angles.

b.

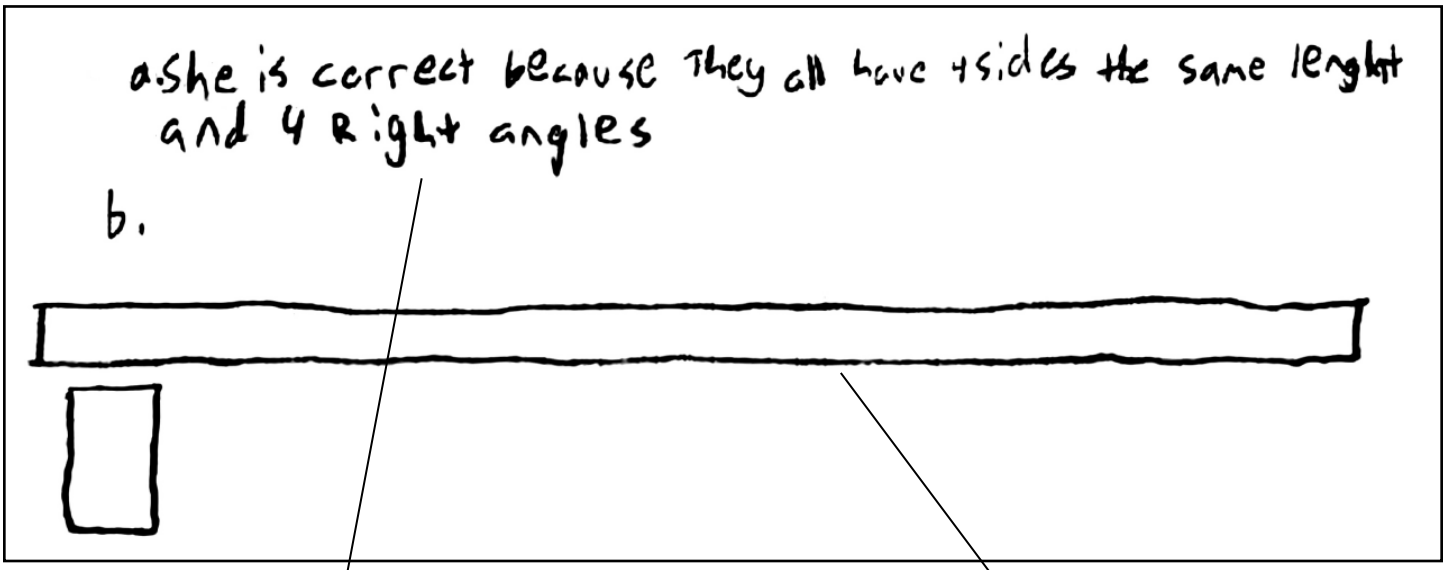


Some rectangles ratios length and width, are very different.

a) Student's explanation is complete—addresses proportional sides and congruent angles. (2 points)

b) Student gives correct drawing and and an appropriate explanation. (2 points)

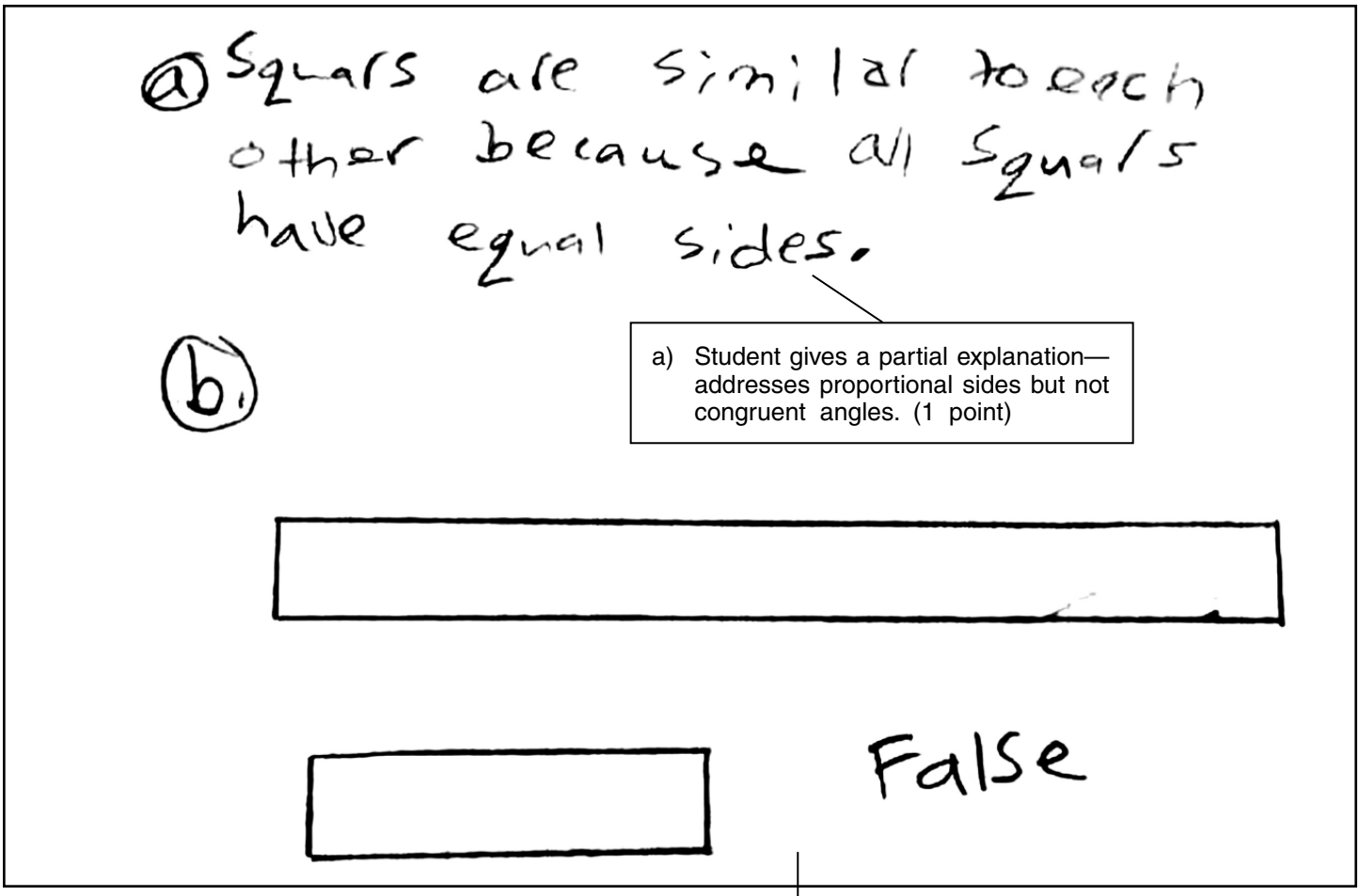
SCORE POINT 3 (EXAMPLE A)



a) Student's explanation is complete—addresses proportional sides and congruent angles. (2 points)

b) Student gives correct drawing without explanation. (1 point)

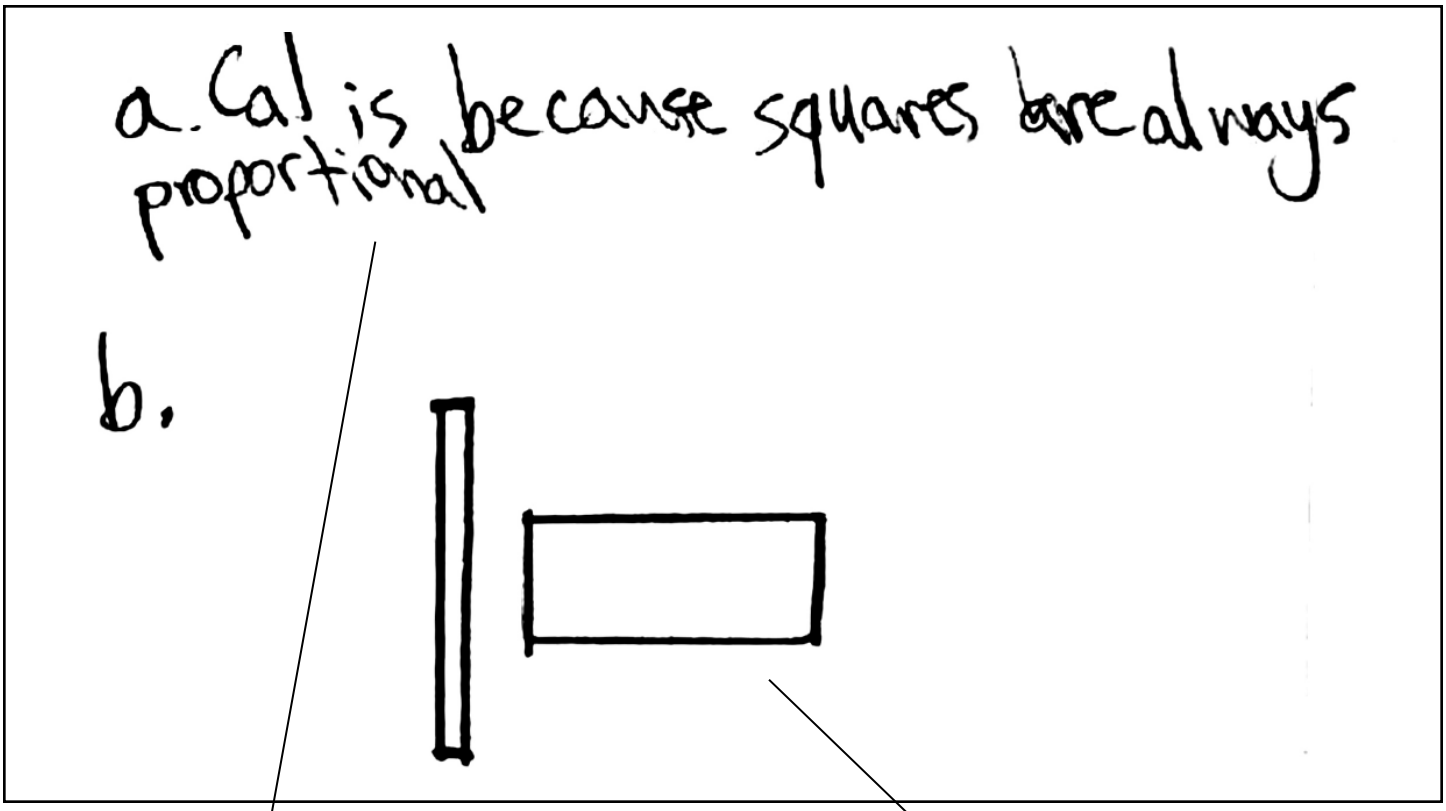
SCORE POINT 2 (EXAMPLE A)



a) Student gives a partial explanation—addresses proportional sides but not congruent angles. (1 point)

b) Student gives correct drawing without explanation. (1 point)

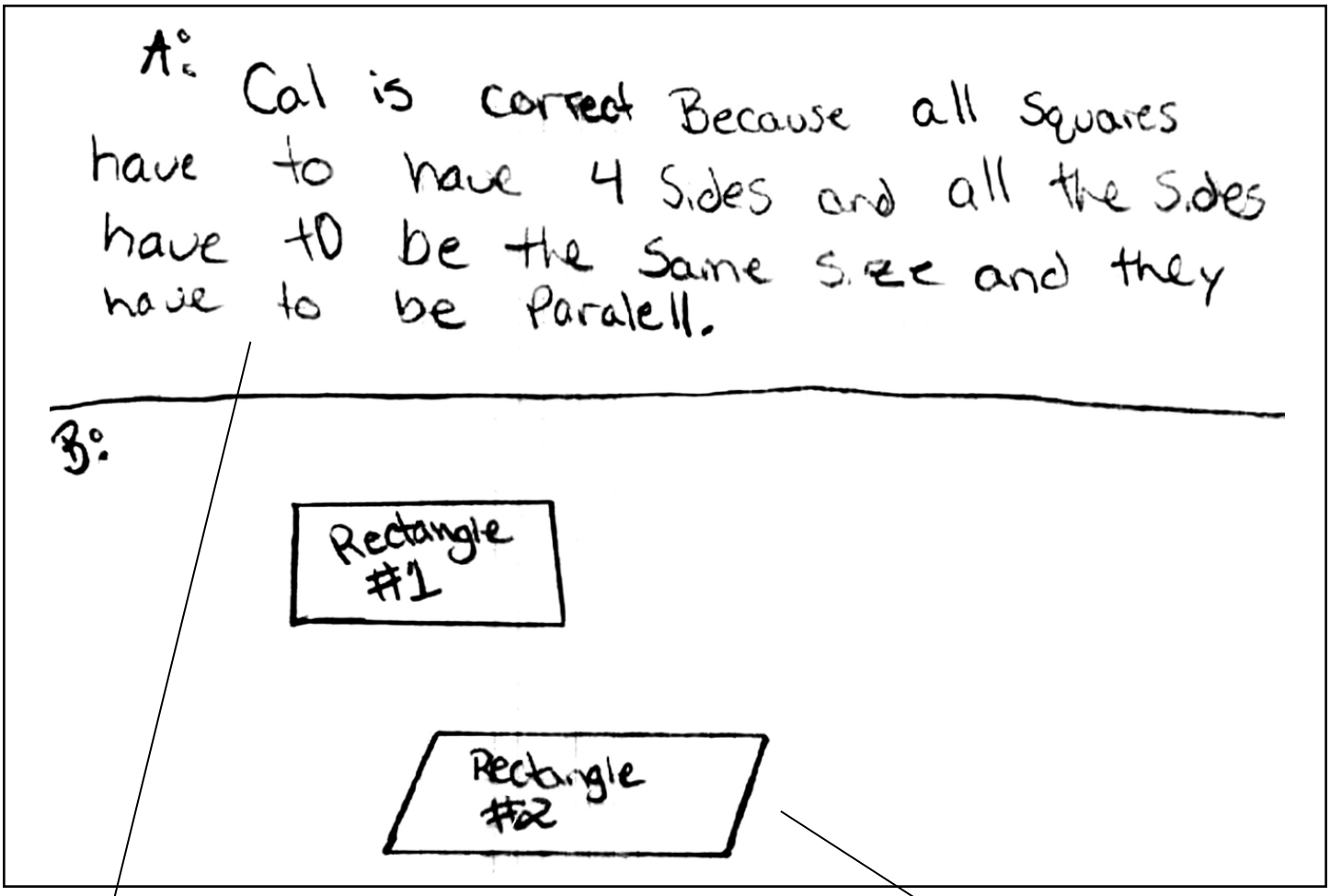
SCORE POINT 2 (EXAMPLE B)



a) Student gives a partial explanation. (1 point)

b) Student gives correct drawing without explanation. (1 point)

SCORE POINT 1 (EXAMPLE A)



a) Student gives a partial explanation—addresses proportional sides but not congruent angles. (1 point)

b) Student's drawing is incorrect. (0 points)

SCORE POINT 0 (EXAMPLE A)

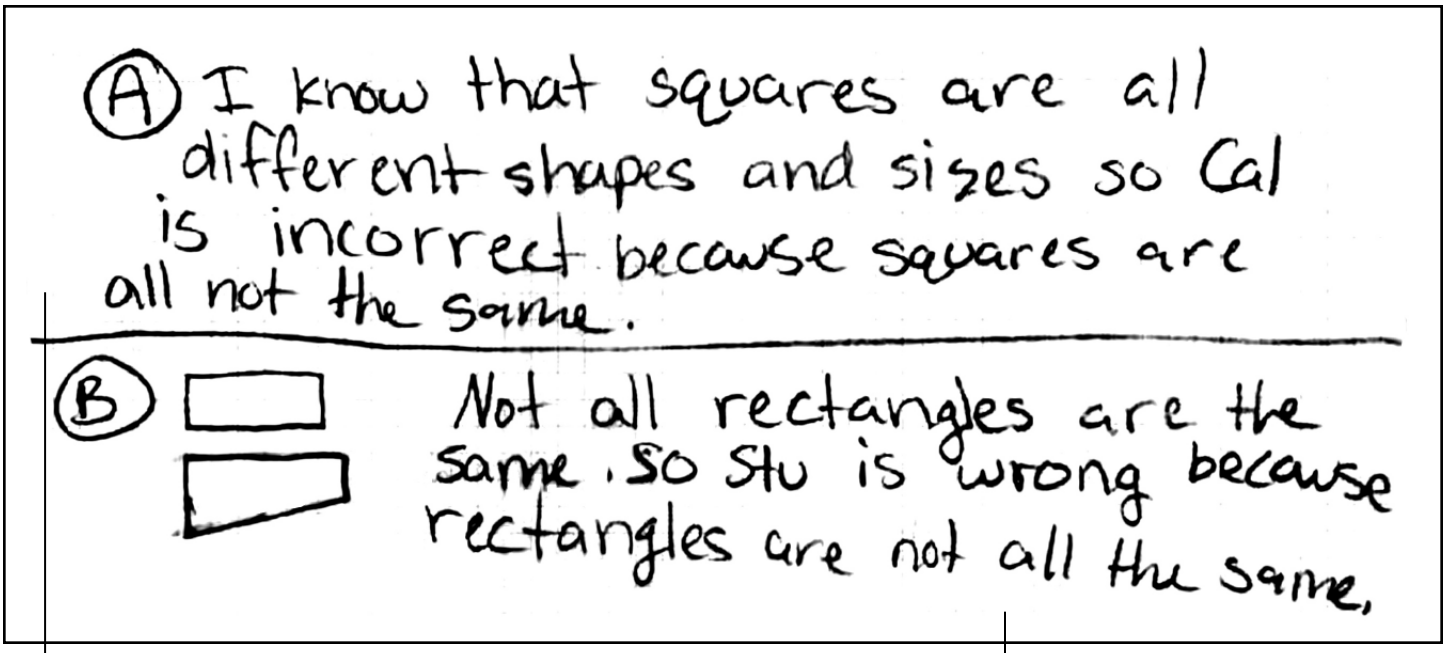
A. Cal is right because all squares are equal.
B.

He is wrong because rectangles can be straight or diagonal.

a) Student's explanation is vague. (0 points)

b) Student's drawing is incorrect. (0 points)

SCORE POINT 0 (EXAMPLE B)



a) Student's response is incorrect. (0 points)

b) Student's drawing is incorrect. (0 points)